

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN A METHOD AND MACHINE FOR THE MANUFACTURE OF COATED WEBS

(71) We, EMERSON & RENWICK LIMITED, of Peel Bank Works, Church, Accrington, County of Lancaster, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a method and machine for coating webs for the manufacture of wall paper or other web materials the machine being of the type in which a coating of a viscous plastics or like material is applied to one face of a web or substrate.

It has been proposed to employ a doctor knife to regulate the thickness of the coating applied to the web but with increased speeds of the web it has been found that a doctor knife is not entirely satisfactory.

The invention comprises a method for coating webs or substrates for the manufacture of wall paper or other web materials comprising passing the web or substrate over a roller rotating in the direction of travel of the web at the point of contact with the web, applying a coating to the web or substrate from a reservoir supplying the coating in a viscous form, passing the web or substrate through the nip between the roller and a smoothing roller driven in the opposite direction from the direction of travel of the web at the point of contact with the web or substrate to remove excess coating material therefrom.

The invention also comprises a machine for carrying out the method of Claim comprising a driven lower roller for traversing the web or substrate, a reservoir formed by a backing plate and two side dams for applying the coating material to the web or substrate and an upper smoothing roller driven in the opposite direction from the direction of travel of the web or substrate at the point of contact with the web to remove excess coating material therefrom and forming a front of the reservoir, and a spring loaded scraper blade for cleaning the upper roller.

The invention will be described with reference to the accompanying drawing showing a diagrammatic transverse section.

A web coating machine is constructed with a driven lower or backing roller A over which the web to be coated passes mounted in bearings in the machine frame C, the backing roller A is of steel, is chromium plated and is driven at the machine speed. A doctor blade α is situated below the web line and against the backing roller to clean off any coating material or other substance which may adhere thereto. The blade α is mounted on a bracket α^1 pivoted on the frame C, the blade α being maintained in contact with the roller A by a leaf spring α^2 . A second upper or smoothing roller B is arranged above the backing roller in bearing blocks b mounted in vertical slides b^1 .

The coating material is contained in a reservoir D formed by a back plate d and two side dams d^1 preferably of nylon, and closed at the bottom and front by the lower or backing roller A and by the upper or smoothing roller B.

The upper or smoothing roller B is also of chromium plated steel and cleaned by a spring loaded scraper blade similar to the blade α to which an oscillating sideways motion is imparted, the roller being driven independently by an independent variable speed drive unit to rotate in the direction of the arrow in the opposite direction at the point of contact with the web from that of the lower or backing roller, at a peripheral speed of between 5 and 50 feet per minute. The nylon side dams d^1 are each laterally adjustable to cater for a variation in coating width, and the side dams complete with backplate d are laterally adjustable (as one Unit D^1) to cater for coating alignment should the web be displaced or irregular.

5 The thickness of the coating is determined by the gap between the two rollers A, B with respect to the web thickness. This gap is adjustable by the movement of a tapered 10 wedge D² which is situated between the bearing blocks of the smoothing and backing rollers. The backing roller bearing blocks are fixed relative to the machine frame, whereas the smoothing roller B is 15 mounted in bearing blocks which slide in a vertical plane as hereinbefore described, thus enabling the coating gap to be varied and also allowing for an increased gap when cleaning the rollers. The smoothing roller movement is controlled by two hydraulic 20 cylinders B1, the piston rods b² of which are attached to each smoothing roller bearing block b. The downward pressure exerted by the cylinders B¹ ensures that the coating gap is unaffected by any tendency for the 25 rollers to separate particularly under the influence of the coating material acting as a hydraulic "wedge".

WHAT WE CLAIM IS:—

25 1. A method for coating webs or substrates for the manufacture of wall paper or other web materials comprising passing the web or substrate over a roller rotating in the direction of travel of the web at the 30 point of contact with the web, applying a coating to the web or substrate from a reservoir supplying the coating in a viscous form, passing the web or substrate through the nip between the roller and a smoothing 35 roller driven in the opposite direction from the direction of travel of the web at the point of contact with the web or substrate to remove excess coating material therefrom.

2. A machine for carrying out the method of Claim 1 for coating a web or substrate with a viscous coating material comprising a driven lower roller for traversing the web or substrate, a reservoir formed by a backing plate and two side dams for applying the coating material to the web or substrate and an upper smoothing roller driven in the opposite direction from the direction of travel of the web or substrate at the point of contact with the web to remove excess coating material therefrom and forming a front of the reservoir, and a spring loaded scraper blade for cleaning the upper roller.

45 3. A machine for coating webs as in Claim 2 in which the thickness of the coating is governed by the gap between the rollers, the spacing of the rollers being varied by hydraulic cylinders operating on the bearing blocks of the upper cylinder.

50 4. A machine for coating webs as in Claims 2 or 3 in which the surfaces of both the rollers are cleaned by scraper blades mounted on pivoted brackets maintained in contact with the cylinders by leaf springs.

55 5. A machine for coating webs as in Claim 2 in which the reservoir is laterally adjustable.

60 6. A method for coating webs for the manufacture of wall paper or other web materials substantially as described.

65 7. A machine for coating webs for the manufacture of wall paper or other web materials substantially as described with reference to the accompanying drawing.

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